

	<b>INSTRUCTION FOR INSTALLATION AND</b>	<b>VHF</b>
	<b>INJECTION HEAD</b> DN 15 - 25    PN 16 - 400	
		PM - 218/17/03/GB

The instructions for installation and service of injection head are binding for users to ensure proper function of injection head. The user must keep the rules said here while servicing, installation and using.

## 1. TECHNICAL DESCRIPTION AND VALVE FUNCTION:

### 1.1 Description

Injection head, equipped with one to three nozzles with fixed geometry, that works on the mechanical principle of atomizing. Two types of nozzles are used. Type H serves for injecting a higher water quantity where a full cone of bigger droplets of injected water is created. Type N utilizes a high pressure drop across the nozzle for very fine spraying of the injected water. This design is not recommended for control ranges higher than 1 : 4.

### 1.2 Application

Injection head is designed to accurately control cooling water injection to the flow of water steam. It is especially designed for industrial applications, such as low-pressure steam production in heating plants, steam circuits of power plants or technologic processes.

### 1.3 Technical data

Series		VHF
Type of injection head		Injection head with 1, 2 or 3 nozzles
Flange 1	Nominal diameter DN	15 - 25
	Nominal pressure PN	16 - 400
Flange 2	Nominal diameter DN	50
	Nominal pressure PN	100 - 400
Body material (including flange)		1.0425 (P265H)      20 to 480°C
		1.7335 (13CrMo4-5)    20 to 550°C
		1.7383 (11CrMo9-10)   20 to 600°C
		1.4922 (X20CrMoV11-1) 20 to 600°C
Flanges		Acc. to EN 1092-1

### 1.4 Operating medium

Injection head is designed for injection of cooling water without mechanical impurities. Using for some other medium should be consulted with producer.

## 2. DIRECTIONS FOR INSTALLATION AND OPERATING OF INJECTION HEAD

### 2.1 Preparation before installation

The injection head is delivered from the company assembled, adjusted and tested. Before installation into pipeline you must check the data on the name-plate with data mentioned in accompanying documentation. Then check if the injection head is not damaged and dirty. Pay attention especially to inner space and packing surface of injection head.

### 2.2 Installation the injection head into pipeline

Injection head must be installed into pipeline so that flow of medium is according to arrows on the flange. The injection head can be installed in any position.

For proper function of injection head, below-mentioned instructions must be obeyed:

- no excessive forces can be transferred from pipeline to injection head.
- the pipeline must be cleaned from dirt before injection head installation.
- it is recommended to keep clean space around the injection head for easy manipulation and service. Space around the injection head = minimum length L (acc. to dimensional sketch - length " L ").
- installation itself must be done precisely.

#### 2.2.1 Checking after installation

After installation, piping system should be pressured and checked if there is no leak.

### **2.3 Operating and service**

When the injection head is used for medium with high dirt-content is probability that jet will be wear out or jet will be clog. Failure will result in loss of cooling power. In this case the professional service must be called.

### **2.4 Elimination of defects and malfunction**

#### **2.4.1 Enormous increasing of noise**

Enormous increasing of noise can be caused by exceeding of operating parameters mentioned on the name-plate or by presence of undesirable particle in injection system of injection head. It is necessary to check the state and consult it with producer.

#### **2.4.2 Injection head can't attain value temperature of steam**

There is need to test the function and tightness of control valve for water injection. If valve is all right then take nozzle out and test function with the assistance of water pressure.

### **2.5 Spare parts**

Spare parts are not part of injection head delivery. They must be ordered separately. When the spare parts are ordered, following data must be written: type of a injection head, registration number of injection head and name of a spare part.

### **2.6 Guarantee conditions**

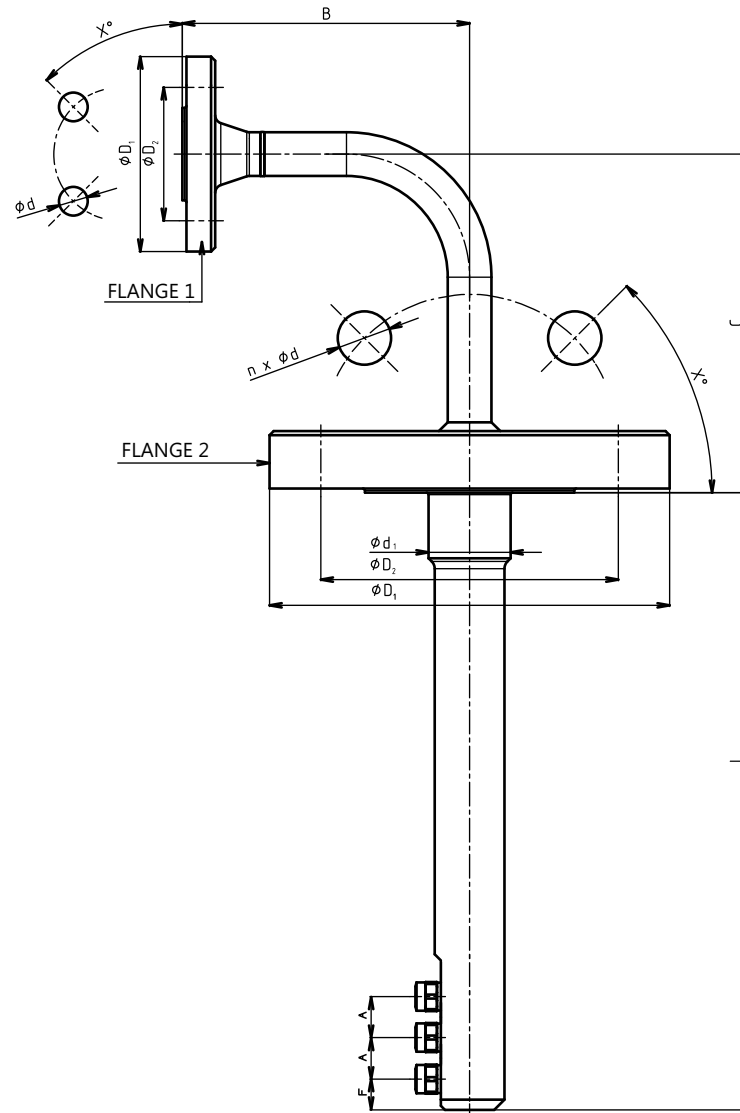
The producer does not guarantee the product operation and safety if the product was used in other way than stipulated in this instructions for installation and service and catalogue data sheet. Any use of the product under different conditions must be consulted with the producer.

The producer does not take over the guarantee if the user makes any change or modification to it without prior written consent from the producer.

### **2.7 Loading with wastes**

Packaging material and the injection head shall be disposed of in the common way such as by handing over to a specialized enterprise for disposal of (body and metal parts - metal waste, other non-metal parts - communal waste).

## Dimensional sketch VHF



## Connecting dimensions VHF

Flange 1

DN	n	X°	PN 16 - 40			PN 63 - 160			PN 250			PN 320			PN 400		
			D <sub>1</sub>	D <sub>2</sub>	d	D <sub>1</sub>	D <sub>2</sub>	d	D <sub>1</sub>	D <sub>2</sub>	d	D <sub>1</sub>	D <sub>2</sub>	d	D <sub>1</sub>	D <sub>2</sub>	d
			mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	4	45	95	65	14	105	75	14	130	90	18	130	90	18	145	100	22
25	4	45	115	85	14	140	100	18	150	105	22	160	115	22	180	130	26

Flange 2

DN	PN 100, 160				PN 250				PN 320				PN 400			
	D <sub>1</sub>	D <sub>2</sub>	n	d	D <sub>1</sub>	D <sub>2</sub>	n	d	D <sub>1</sub>	D <sub>2</sub>	n	d	D <sub>1</sub>	D <sub>2</sub>	n	d
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
50	195	145	4	26	200	150	8	26	210	160	8	26	235	180	8	30

DN	d <sub>1</sub>	A	F	B					C	L <sub>max</sub>
				PN 16-40	PN 63-160	PN 250	PN 320	PN 400		
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
15	40	20	15	140	147	162	162	170	165	385
25	40	20	15	192	210	217	230	242	215	385

## Ordering codes for injection head VH

		XXX	X	XXX	/	XXX	-	XXX	/	XXX	X	X	X	X	XX
Series	Injection head	VHF													
Number of nozzles	1 to 3 nozzles - acc. to execution		X												
DN flange 2	DN50			XXX											
DN flange 1	DN - acc. to execution					XXX									
PN flange 2	PN - acc. to execution							XXX							
PN flange 1	PN - acc. to execution									XXX					
Connection - steam pipeline	Raised flange											1			
	Flange with groove											2			
	Plain flange											3			
Connection - water	Raised flange												1		
	Flange with groove												2		
	Plain flange												3		
Material	Carbon steel 1.0425 (20 to 480°C)													1	
	Alloy steel 1.7335 (20 to 550°C)													2	
	Alloy steel 1.7380 (20 to 600°C)													6	
	Stainless steel 1.4922 (20 to 600°C)													7	
	Other material													9	
Type nozzle	Type H or M														X
Nozzle size	Acc. to table														XX

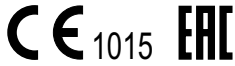
**Ordering example:** Injection head VHF with 1 nozzle type H, size 2, connection to steam pipeline DN50 PN 100, flange for connection to the injection water DN25 PN160 type B1, material 1.7335 is marked as: **VHF1 050/025-100/160 112 H02**

Note: Part of delivery are connecting material and gasket for connection to steam pipeline .

**Maximum permissible working overpressure acc. to EN 12516-1 [MPa]:**

Material	PN	Temperature [ °C ]										
		100	150	200	250	300	350	400	450	480	550	600
Carbon steel 1.0425	16	1,5	1,42	1,34	1,23	1,11	1,04	0,96	0,59	0,36	---	---
	25	2,34	2,22	2,10	1,92	1,74	1,62	1,50	0,92	0,56	---	---
	40	3,74	3,55	3,36	3,07	2,78	2,59	2,40	1,47	0,90	---	---
	63	5,90	5,59	5,29	4,84	4,38	4,08	3,78	2,32	1,41	---	---
	100	9,36	8,88	8,40	7,68	6,96	6,48	6,00	3,68	2,24	---	---
	160	14,9	14,2	13,4	12,2	11,1	10,3	9,60	5,89	3,59	---	---
	250	23,4	22,2	21,0	19,2	17,4	16,2	15,0	9,20	5,60	---	---
	320	29,9	28,4	26,8	24,5	22,2	20,7	19,2	11,7	7,17	---	---
400	37,4	35,5	33,6	30,7	27,8	25,9	24,0	14,7	8,96	---	---	

Material	PN	Temperature [ °C ]										
		100	150	200	250	300	350	400	450	500	550	600
Alloy steel 1.7335	16	1,6	1,6	1,6	1,6	1,6	1,49	1,37	1,26	1,0	0,47	---
	25	2,5	2,5	2,5	2,5	2,5	2,33	2,13	1,97	1,56	0,73	---
	40	4,0	4,0	4,0	4,0	4,0	3,73	3,41	3,15	2,5	1,17	---
	63	6,3	6,3	6,3	6,3	6,3	5,87	5,38	4,97	3,93	1,85	---
	100	10,0	10,0	10,0	10,0	10,0	9,31	8,53	7,89	6,24	2,93	---
	160	16,0	16,0	16,0	16,0	16,0	14,9	13,6	12,6	9,99	4,70	---
	250	25,0	25,0	25,0	25,0	25,0	23,2	21,3	19,7	15,6	7,34	---
	320	32,0	32,0	32,0	32,0	32,0	29,8	27,3	25,2	19,9	9,39	---
	400	40,0	40,0	40,0	40,0	40,0	37,2	34,1	31,5	24,9	11,7	---
Alloy steel 1.7383	16	1,6	1,6	1,6	1,6	1,6	1,5	1,37	1,26	1,05	0,56	0,24
	25	2,5	2,5	2,5	2,5	2,5	2,35	2,13	1,97	1,65	0,88	0,37
	40	4,0	4,0	4,0	4,0	4,0	3,75	3,41	3,15	2,63	1,41	0,6
	63	6,3	6,3	6,3	6,3	6,3	5,91	5,38	4,97	4,15	2,22	0,94
	100	10,0	10,0	10,0	10,0	10,0	9,38	8,53	7,89	6,58	3,52	1,49
	160	16,0	16,0	16,0	16,0	16,0	15,0	13,6	12,6	10,5	5,63	2,39
	250	25,0	25,0	25,0	25,0	25,0	23,4	21,3	19,7	16,4	8,80	3,73
	320	32,0	32,0	32,0	32,0	32,0	30,0	27,3	25,2	21,0	11,2	4,78
	400	40,0	40,0	40,0	40,0	40,0	37,5	34,1	31,5	26,3	14,0	5,98
Stainless steel 1.4922	16	1,6	1,6	1,6	1,6	1,6	1,5	1,37	1,26	1,05	0,9	0,42
	25	2,5	2,5	2,5	2,5	2,5	2,35	2,13	1,97	1,65	1,46	0,65
	40	4,0	4,0	4,0	4,0	4,0	3,75	3,41	3,15	2,63	2,33	1,05
	63	6,3	6,3	6,3	6,3	6,3	5,91	5,38	4,97	4,15	3,67	1,65
	100	10,0	10,0	10,0	10,0	10,0	9,38	8,53	7,89	6,58	5,82	2,61
	160	16,0	16,0	16,0	16,0	16,0	15,0	13,6	12,6	10,5	9,32	4,18
	250	25,0	25,0	25,0	25,0	25,0	23,4	21,3	19,7	16,4	14,5	6,54
	320	32,0	32,0	32,0	32,0	32,0	30,0	27,3	25,2	21,0	18,6	8,37
400	40,0	40,0	40,0	40,0	40,0	37,5	34,1	31,5	26,3	23,3	10,4	



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